ACKNOWLEDGMENTS

The following individuals contributed to the preparation and adoption of this document.

GITF Members

David Scott, Chair - Brazos Greenways Council
James Massey - Planning and Zoning Commission
Wayne Rife - Planning and Zoning Commission
John Crompton - Parks Board
Mike Manson - Parks Board
Mike McClure - Storm Drainage and Drainage Issues Representative
David Scarmardo - Development/Real Estate Community Representative
Sherry Ellison - Neighborhood/Home-owner Association Representative
Lynn Allen - Recreation Organization Representative
Don Mueller - Environmental Science Community Representative
Harlow Landphair - Landscape Architect
Tom Brymer, Assistant City Manager - Staff Liaison

Mayor and Council

Lynn McIlhaney - Mayor
Steve Esmond - Place 1
Ron Silvia - Place 2
Swiki Anderson - Place 3
Larry Mariott - Place 4
David Hickson - Place 5
Anne Hazen - Place 6

Planning & Zoning Commission

James Massey - Chair
Winnie Garner
Ron Kaiser
Steve Parker
Karl Mooney
Dennis Maloney
Wayne Rife

Supporting City Staff

Tom Brymer, Assistant City Manager
Jane Kee, City Planner
Nanette Manhart, Mapping Specialist
Edward Broussard, Management Assistant
Jennifer Mixon, Planning Intern
Mark Smith, Director of Public Works
Ric Ploeger, Assistant Director of Parks & Recreation
Steve Beachy, Director of Parks & Recreation
Carla Robinson, Assistant City Attorney

Other Contributors

Scott Shafer, Professor, TAMU RPTS
Michelle Brown**,** Graduate Student, RPTS
Texas A&M University Recreation & Parks Department
Brazos Greenways Council

Table of Contents

List of Figures

A Network of Greenways for College Station

A Master Plan Document
February 1999

The purpose of this document is to provide guidance in the implementation of those portions of the City of College Station's 1997 Comprehensive Plan that address the development of "greenways" within the City.

I. "Greenways" - What Are They?

Increased development in and around Texas cities is creating a variety of concerns for residents and planners. The increase in hard surfaces created through development often leads to drainage and flooding problems. Land use changes from rural agricultural to commercial and residential create a landscape that has lost the rural charm for which Texas is known. The pattern of land use is oriented toward the automobile making it difficult for people to walk or ride bicycles. The designation and development of greenway systems in and around urban areas can help with all of these concerns and enhance community quality of life in many ways.

Just what are greenways? Greenways are corridors that follow natural features like the floodplain of creeks, or human-made features such as utility corridors, roads or railroad beds. When designated along creeks and rivers, greenways help improve water quality and reduce the effects of flooding in floodplains.

Besides providing floodplain control and improving water quality, greenways are becoming increasingly recognized as ways to connect people and places. Greenways provide alternative transportation choices , provide people a safe place to pursue different outdoor recreation activities, including walking, bicycling, in-like skating, and jogging and provide an aesthetically appealing contrast to asphalt and concrete. Greenways are also recognized as an economic asset. Greenways have proven to increase real estate values of adjacent properties, and to attract tourists, and to produce tourism revenues. Greenways also help protect flora and fauna by preserving natural areas and facilitating movement along natural corridors.

Many Texas cities have greenways or greenway systems that are functioning in the ways noted above. Houston has greenways along several of its bayous providing trails for recreation and open space for flood control. Plano has greenways woven among its suburban neighborhoods connecting them to schools and shopping areas. San Antonio has one of the country's most famous greenways, The Riverwalk, which serves as a major tourist attraction. For many years Austin has been developing a "hub and spoke" system of greenways that radiate off of Town Lake near its central business district. These "spokes" integrate natural open space into the community while providing trails for alternative transportation and recreation.

II. The "Greenway Idea" in College Station

The greenway idea is not new to College Station. In the late 1980's a group of forward looking citizens and city officials saw potential in one of College Station's most important creeks. A 1.5 mile section of Wolf Pen Creek became the focus of an urban development plan which would have created a business district with a greenway at its heart. A public park was developed as a part of the project but connections up and down stream were never realized. This project has been revived in the last few years and appears to be moving forward. The Wolf Pen Creek corridor has the potential to be one of College Station's centerpieces in the future.

The 1995 Brazos 20/20 Vision process, which was a countywide initiative, also provided fuel for ideas related to greenways in and around College Station. Citizen working groups charged with developing visions for "infrastructure" and "the environment" in the region developed numerous recommendations related to using open space floodplains for drainage and recreation. One 20/20 idea proposed that floodplains along the Navasota and Brazos Rivers be connected to those along area creeks to create a long distance trail system for transportation and recreation.

The College Station Comprehensive Plan, adopted by the City Council in August of 1997, included several goals and objectives that directly address the need for a system of greenways. A summary of these goals follows.

Land Use Goals of the plan indicate that "College Station should encourage land use that is in harmony with the environment." One of the key objectives that addresses this goal recommends that College Station "prohibit reclamation of the floodway associated with Carter, Lick and Wolf Pen Creeks and the Brazos River to prevent upstream flooding" and to provide the city with a network of open space.

Community Appearance Goals in the plan say that "College Station should promote a beautiful and safe environment." It goes on to say that one way to accomplish this is to "promote good site design, provide a good appearance, minimize drainage impacts and increase pedestrian safety".

Transportation Goals in the comprehensive plan say that "College Station should balance the development of all modes of transportation to assure the fast, convenient, efficient and safe movement of people and goods to, from, and within the community while continuing to protect the integrity of neighborhoods." An objective set to help accomplish this indicates the community should "develop adequate, safe systems for pedestrian and bicycle movement among neighborhoods, schools, parks, retail/office areas and the University.

Goals for Parks and Recreation in the plan recommend that "College Station should enhance its system of parks, recreation facilities and open space" and "encourage additional connections by a system of linear parks/parkways which utilize creek beds, drainage ways, and other natural features". The recommendation is also made to "develop greenbelts to connect park and residential areas by "develop[ing] a donation/purchase policy to acquire elected portions of the 100 year floodplain to provide natural corridors of open space for passive recreation that will link parks to one another and to residential areas." *A Parks Master Plan is currently being prepared that will reference and incorporate this Greenways Master Plan.*

III. The Greenways Implementation Task Force

As part of this newly adopted plan, City Council appointed an 11 member Greenways Implementation Task Force (GITF) to prepare a Greenways Master Plan for the City. The charge to the GITF was:

> To develop recommendations related to the implementation of the greenways portion of the College Station Comprehensive Plan including:
>
> - Define greenways as they relate to the CS Comprehensive Plan
> - Identify potential uses for specific greenway areas
> - Determine potential methods of land acquisition or reservation
> - Prioritize specific areas to be dedicated and "developed" as greenways
> - Develop one or more proposed projects for consideration in the 1999 capital improvement program.

The Task Force met twice a month to discuss goals and objectives, inventory existing greenways, develop a definition and classification system and prioritize greenways based on specific criteria. The City had a successful bond election in November of 1998 where 3.5 million dollars were allocated for greenways acquisition.

IV. Greenways Defined

Part of the charge of the Task Force was to develop a definition of greenways specific to this area. This definition includes more than just floodplains and creeks. It is broader and is meant to allow the City to ultimately incorporate human-made corridors as part of an overall greenways system.

> Definition: *Greenways in College Station (and Brazos County) are defined as linear open spaces that follow natural features like the floodplains of creeks and rivers or human-made features such as utility, road or rail corridors. College Station's floodplains will serve a variety of functions, including but not limited to, floodplain mitigation, provide trails to link neighborhoods, parks, public institutions and businesses, provide for aesthetic beauty, recreation and alternative transportation and protect wildlife and plants. Greenways along human-made corridors, associated with facilities like roads and utilities, will provide trail connections for alternative transportation and recreation. They will help link economic nodes, cultural/historic areas, parks and residential areas. Greenways in College Station should form a network and should be diverse in their form and function linking developed urban corridors with undeveloped natural areas.*

V. Inventory of Current Greenway Resources

College Station has a variety of linear features that could be designated and developed as part of a greenway system. Several creeks run through its center and help to create its borders. The floodplains associated with these creeks have the greatest potential to meet the goals of creating natural greenways in College Station. They contain natural open space and run through neighborhoods, past schools and shopping areas. Area creeks (Carter, Bee, Lick, Spring, Wolf Pen and Alum) are key greenway resources. **(Figure 1)**

Peach Creek, South of College Station, White Creek to the west as well as the Navasota and Brazos Rivers all offer future floodplain and trail connections in and around College Station. **(Figure 2)** As suggested by Brazos 20/20 Vision, College Station and Bryan have the potential to make these water features into a soft infrastructure of natural areas and trails for the benefit of residents and tourists alike. There are also human made features like the Gulf States / C.S. Utilities / Exxon right-of-way (ROW) in east College Station. This Utilities ROW extends along the entire length of northeastern College Station as well as south to Navasota and north to Hearne. The use of railroad rights-of-way for trails is also common throughout the United States with over 900 trails currently in existence. Any current railroad rights-of-way that are vacated in the future should be considered for conversion to rail trail based greenways. (***For additional detail concerning all of these existing linear features refer to Figures 7-11 in Appendix 1)***

FIGURE 1

FIGURE 2

VI. Natural Greenways Classification System

Having defined and inventoried the existing network of greenways, GITF began to develop a system for classifying the different types of greenways. Individual greenway pieces must be viewed as parts of a larger whole and prioritized based on criteria specific to all of College Station. A greenway classification system should take several criteria into consideration. The following are important ones for consideration.

- Level of development/improvements of the greenway
- The type of development (e.g., residential, industrial) that currently exists, or is anticipated, along the greenway corridor.
- Potential for connections that the corridor can provide for human use and movement of wildlife.
- The type of use the corridor is likely to receive (e.g., commuting to work or school, recreation and exercise or nature study).
- The type of feature the corridor follows (e.g., a creek or an abandoned rail bed).
- Public ownership or private ownership

It should be noted that due to the linear nature of a greenway corridor it may contain different combinations of these criteria along its length. One continuous greenway could be classified several different ways as it moves from one area through a neighborhood and on to a rural park.

College Station's GITF devised a classification system containing three different types of greenways based on function; Urban, Suburban and Rural and described characteristics for each. Characteristics include connectivity, access, corridor width, trail type, development inside the greenway and development surrounding the greenway ***(Figure 3*)**. The description of each type can be found below.

Urban Greenways:

Urban greenways will be the most highly developed of the three types of greenways. The primary functions served by these greenways will be to provide for flood control, recreation, transportation, economic and aesthetic purposes. Wildlife protection and service as a utility corridor will serve as secondary functions. **(Figure 4)**

Characteristics:

Urban greenways will provide connections between commercial areas along the greenway and surrounding areas. Highly visible access to the greenways will occur at frequent intervals between the surrounding development and the corridor. The width of the corridor will be determined by the floodway line, plus some additional area, to be determined for each specific site. The trail, within the corridor, will be designed to handle primarily pedestrian traffic. It will be a wide trail, having a hard, smooth surface. Urban greenways will be used quite intensely, simply because of where they are located and the surrounding uses. Improvements to the channel should occur only as needed using the softest technique possible. Development surrounding urban greenways will occur at the highest intensity, will be in close proximity to the edge of the corridor and should be sensitive to the creek. This development will be primarily commercial and multi-family residential. Examples of urban greenways in College Station are the main channels of Wolf Pen Creek and Bee Creek from Texas Avenue to SH 6 East ByPass.

FIGURE 3

FIGURE 4

Suburban Greenways:

As with urban greenways, the primary functions served by suburban greenways will be to provide for flood control, recreation and transportation, and to serve economic and aesthetic purposes. Wildlife protection and service as a utility corridor will be secondary functions. **(Figure 4)**

Characteristics:

There will be moderate to high levels of use. These corridors will connect users and their destinations such as neighborhood to other neighborhoods, to businesses, to parks or to schools. Access points will be visible and may include lighting, signage, picnic areas or playgrounds. The width of a suburban greenway should be the entire floodplain, or if surrounding development is present, what can reasonably be obtained. The trails will serve a variety of recreational and transportation uses and will be relatively wide with a medium to hard surface. The trail itself, is the focus of the greenway. Channel improvements should only be made if necessary and using the softest techniques feasible. Bridge structures should provide grade separation for safe passage of users. Surrounding development will consist of low to medium density single family, multi-family , mixed use, retail commercial and uses such as churches and schools. Examples of what could someday be suburban greenways in College Station are portions of Bee Creek and Wolf Pen Creek west of Texas Avenue and Lick and Spring Creeks from their beginnings to the confluence with Alum Creek.

Rural Greenways:

The primary functions of rural greenways are to control flooding, to protect wildlife and to increase aesthetic value. Recreation, transportation, economics and. service as a utility corridor will serve as secondary functions. **(Figure 4)**

Characteristics:

This type of greenway would exist in a mostly "natural" state with connections made for wildlife movement and some trails developed for public use. The surrounding land use would be primarily agricultural, undeveloped open space or low density residential. Riparian areas would see very little, if any, modification. Trails would be more primitive, designed for lower levels of use and may connect larger nature oriented parks or preserves. User amenities would be less common and found only at destination points. The corridor width would contain the entire floodplain and possibly more in some areas to include key natural or cultural areas. There would be limited channel improvements allowed and bridge structures would be grade separated to allow safe passage of pedestrians and bicyclists. As it currently exists, much of the Carter Creek floodplain would be an example of this type of greenway. Lick Creek also provides an example.

VII. Natural Greenways Prioritization

Once the classification was complete and various characteristics described for each greenway, the Task Force identified several criteria to be used in evaluating the various greenways for acquisition priority. The criteria are (1) whether structural flooding problems exist, (2) whether there are existing CIP projects or plans impacting the greenway, (3) the immediacy of development near the greenway, (4) the amount of undeveloped land surrounding the greenway, and (5) whether the greenway provides a link to existing schools, parks, residential and commercial areas. Criteria (3) and (4) indicate the potential to gain greenspace in areas where development is imminent.

As there were already projects underway addressing the areas where flooding had occurred, criteria one was not as critical to this process as others at this time. ***(Figures 5 & 6 describe and locate greenways by priority. Appendix 2 provides scoring method)***

FIGURE 5

FIGURE 6

VIII. General Guidelines for Development and Maintenance of Greenway Trails

Since one of the objectives of greenways is to provide open space, development of these corridors should be kept to a minimum. The cross sections included in **Appendix 3** (from Appendix C, Wolf Pen Creek Siltation Study, Turner Collie & Braden, Jan. 1998) vary in intensity from no development in rural greenways to masonry or gabion lined channels in urban greenways. The general guideline to use in selecting a cross section is to select the least intensive, least structural, most natural section that will work.

Though each trail should be individually designed to take full advantage of its unique natural surroundings, there are a few general guidelines that should guide all decisions in proper trail planning, construction, and maintenance:

Design for Sustainability: A trail that is well constructed can almost take care of itself. After surveying the area for topography, soil types, and drainage patterns, one should:

- Find the most stable, well-drained soils which can bear the intended traffic.
- Layout the trail so that it will be resistant to deterioration both from rain and use. Techniques such as climbing turns, in which a trail curves up a slope rather than going straight up, can greatly lessen the physical stress to the user and prevent erosion. Straight trails perpendicular to a slope become channels for rainfall.
- The most frequently flooded areas should be avoided for trail development to minimize silt and debris clean-up.

Minimize Environmental Impact: Learn about the area where the trail is planned. Aim to disturb the environment surrounding the trail as little as possible, especially in ecologically sensitive areas. Educate users through educational signs and brochures to respect the land and the life it supports.

Harmonize with the Environment: Whether in the forest or urban environment, the trail should blend and harmonize with its environment. Use natural construction materials, place signs only where necessary, and choose unobtrusive colors for signs and trail features.

Scenic Views and Special Features: Take advantage of all the trail corridor can offer. Summits, streams, scenic views, historic features, and other interesting features can all add to the experience. Pick viewpoints along the trail and make getting there as interesting as possible.

User Enjoyment: Arrange appropriate trails and related access points within the greenway system to provide good access for all residents. The smoothness of the trail and installation of guide rails will contribute to the accessibility of the trail. Plan and arrange trails that provide a great view, an interesting historic, cultural or ecological feature to make the trip more enjoyable. Identify intersections and connections that are especially important for alternative transportation within the community and integrate them into the system. For mountain bikers or equestrians, trail width, height, and sight distance are considerations. Enhance the usefulness and safety of greenway trails by providing well designed, grade separated crossings at high use intersections with roadways.

Adjacent Landowners: A buffer between the trail and neighboring landowners protects both the integrity of the user's experience and the privacy of the local residents. Work carefully with property owners as partners.

Construction and Maintenance Guidelines

Any development that occurs in or near the greenway should comply with the characteristics outlined in Figure 3 as well as the following:

Construction Techniques: Trails should be built in dry areas to minimize siltation and erosion damage. Where this is not possible, elevate the trail tread above the existing terrain using appropriate methods.

A well designed and constructed trail takes into consideration drainage. Rolling dips involve a leveling of the trail every 50-100 feet as it climbs a slope. This leveling for a short distance helps drainage. Waterbars, made of rocks or logs should be a last resort. They are obstacles to users and are hard to maintain.

Signs: Signs can indicate the trail name, landmarks and points of interest, educational information, warnings, distances, public facilities, the location of nearby potable water, and the location of other trails. Blazes are painted marks on trees or small signs with trail logo placed to reassure trail users they are still on the right trail. Before placing the first sign or blaze, travel the trail and not locations where signs and blazes should be placed. Map the location of signs for ease of finding when doing future maintenance.

Maintenance: Trails should be maintained at least twice a year to clear downed trees, debris, and repair water damage. It's a good idea to schedule maintenance before each heavy use season to make the trail safe and enjoyable for the majority of users. Routing maintenance can be performed by trail-adopter groups. These are volunteers who want to help agencies maintain the trails they use most.

IX. Strategic Implementation Actions

Implementation of the Greenways Plan is a long term process involving several areas within the City organization as well as City/community partnerships. The cooperative efforts of the Brazos Greenways Council, citizens on the GITF and city staff in the preparation of this plan is an example of the kind of partnership possible. The adoption of this plan and the passage of bond funds in 1998 for greenways acquisition are a very positive start. There are additional actions over the long term that should be taken to insure the successful implementation of this plan.

Strategy #1: Acquisition

1. **Action:** The City should accept dedications that are consistent with the greenway characteristics specified in this plan.
   Responsible Party: *Development Services*
   Supporting Party: *Parks*

2. **Action:** Encourage voluntary conservation, preservation, and dedication of greenways by landowners. The Brazos Greenways Council and other similar groups, in cooperation with the City should meet with local developers to educate and discuss the value and benefits of conservation and preservation to their particular property.
   Responsible Party: *Brazos Greenway Council*

3. **Action:** Develop a program for acquisition of greenways corresponding with the 5-year capital improvement program and the prioritization in this plan. Coordinate

this acquisition program with other City projects requiring acquisition, such as parks, streets, and utility projects.
Responsible Party: *Public Works*
Supporting Parties: *Public Utilities, and Parks*

4. **Action:** Utilize City funding sources, including bond funds if necessary, to acquire land acquisition services. Preference should be given to funding a staff position for FY99-00 that could be supplemented with outside contracts for acquisition services, if necessary.
Responsible Parties: *Parks, Public Works, and Fiscal Services*

5. **Action:** Pursue and acquire external funding sources such as grants for continued greenway acquisition. Refer to **Appendix 4** for a list of possible funding sources.
Responsible Parties: *Parks and Public Works*

6. **Action:** Develop guideline incentives that encourage developers to voluntarily dedicate lands that promote greenway connections between developments.
Responsible Party: *Development Services*

Strategy #2: Regulation

Refer to ***Appendix 5*** for a summary of existing regulations as they relate to greenways.

1. **Action:** Amend the City's subdivision regulations to include greenway definitions and classifications with reference to the Greenways Master Plan. Guidelines should encourage street layout to maximize access, visibility and connections to and within the greenway network. Develop guidelines for greenway preservation through land dedication, conservation easements and/or fee simple acquisition.
Responsible Party: *Development Services*
Supporting Party: *Parks*
Timeline:
Develop ordinance language - Summer 1999.
Review with internal departments - Summer 1999.
Present to focus group - Winter 1999.
Consideration by P&Z and City Council - Winter / Spring 1999-00.

2. **Action:** Monitor the recently revised parkland dedication ordinance as it is used to determine if additional changes are necessary to support the Greenways Master Plan.
Responsible Party: *Parks*
Supporting Party: *Development Services*

3. **Action:** Amend the City's drainage ordinance to reflect the greenways definition and classification in terms of corridor width and channel guidelines (level of alteration, structural/nonstructural).
Responsible Party: *Public Works*
Timeline:
Develop ordinance language - Summer / Fall 1999.
Review with internal departments - Fall 1999.
Present to focus group - Winter 1999.
Consideration by P&Z and City Council - Winter / Spring 1999-00.

4. **Action:** Investigate overlay zones that aid in greenway protection and prepare zoning ordinance amendments if appropriate.
Responsible Party: *Development Services*
Timeline:
Research other communities and literature - Summer 1999.
Develop ordinance language - Summer / Fall 1999.
Review with internal departments - Fall 1999.
Present to focus group - Winter 1999.
Consideration by P&Z and Council - Winter / Spring 1999-00.

5. **Action:** Amend the Zoning Ordinance (Ord. 1638) to reference the Greenways Master Plan in Planned Development Districts and elsewhere as appropriate.
Responsible Party: *Development Services*
Timeline:
Develop ordinance language - Summer / Fall 1999.
Review with internal departments - Fall 1999.
Present to focus group - Winter 1999.
Consideration by P&Z and City Council - Winter / Spring 1999-00.

6. **Action:** Service Plans for future annexations should require dedication of greenway resources that are important to the overall greenways system.
Responsible Party: *Development Services*

Strategy #3: Construction, Maintenance and Operations

1. **Action:** Acquire adequate funding for greenway development from various sources. Refer to **Appendix 4** for a list of possible funding sources.
Responsible Parties: *Parks and Public Works*

2. **Action:** Design and construct trails by following the development and maintenance guidelines found in Section VIII. of this plan.
Responsible Party*: Parks*
Supporting Party*: Public Works*

3. **Action:** Develop a program for long term maintenance of publicly held greenways.
Responsible Party: *Parks*
Supporting Party: *Public Works*

4. **Action:** Incorporate maintenance costs into budgets of future years.
Responsible Parties*: Parks and Public Works*

5. **Action:** Design greenways in floodplains to handle flood water, while preserving other natural resources. Use the expertise of outside resources as well as city staff.

Responsible Party: *Public Works*

Strategy #4: Coordination / Promotion

1. **Action:** Allocate additional resources for coordinating the Greenways Master Plan and its implementation. Preference should be given to funding a staff position for FY99-00 that could be supplemented with outside contracts for acquisition services, if necessary.
Responsible Party: *City Management / City Council*

2. **Action:** Coordinate with other agencies when greenways cut across jurisdictional boundaries.
Responsible Party: *Development Services*
Supporting Parties: *Parks, Public Works, and Public Utilities*

3. **Action:** Monitor and continue to advocate a greenways system in College Station.
Responsible Party: *Brazos Greenways Council and/or other appropriate groups*

4. **Action:** Engage neighborhood associations to promote greenways in currently developed areas and to assist with upkeep (by adoption) of those areas after designation.
Responsible Party: *Brazos Greenways Council and/or other appropriate groups*

5. **Action:** Encourage interested outside groups to develop and maintain a detailed inventory of the wildlife, vegetation, wetlands, and other important natural features that exist along area creeks so that creek based greenways can be designated and developed to enhance wildlife and plant habitats.
Responsible Party: *Brazos Greenways Council and/or other appropriate groups*

6. **Action:** Provide for access to unique areas along greenways where people can enjoy and study natural processes.
Responsible Party: *Parks*

7. **Action:** Develop and maintain public information relative to greenways in College Station.
Responsible Parties: *Development Services, Parks, Public Works*
Supporting Parties: *Public Relations, Public Utilities, and Brazos Greenways Council, College Station Library*